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A New Baenid Turtle From the Upper Cretaceous of Montana

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INTRODUCTION

The baenoids are among the commonest turtles in North American terrestrial Jurassic and Cretaceous formations. Shells of baenoids are often found, but skulls are relatively rare, and it is primarily the skulls that furnish useful taxonomic and phylogenetic information. The present paper is a preliminary announcement of a new baenoid genus based on a particularly well-preserved skull. The detailed comparative morphology of this new genus and its broader relationships are dealt with in a monographic revision of the Baenoidea (Gaffney, ms.), now in preparation for publication.

We wish to acknowledge the assistance of Dr. Bobb Schaeffer, Chairman and Curator, Department of Vertebrate Paleontology, the American Museum of Natural History, who read the manuscript and made available comparative collections and study facilities; Dr. Edwin H. Colbert, Curator Emeritus, the American Museum of Natural History, who advised the senior author during the study; and Dr. John Ostrom, Curator, Yale Peabody Museum, who lent us the type specimen of *Eubaena cephalica*.

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² Glendive, Montana.



FIG. 1. Dorsal view, *Stygiochelys estesi*, new genus and species, A.M.N.H. No. 2601. Hell Creek Formation, Montana.

ABBREVIATIONS OF INSTITUTIONS

A.M.N.H., the American Museum of Natural History

Y.P.M., Peabody Museum of Natural History, Yale University

SYSTEMATICS

CLASS REPTILIA

ORDER TESTUDINES

SUBORDER CRYPTODIRA

SUPERFAMILY BAENOIDEA

FAMILY BAENIDAE

STYGIOCHELYS,¹ NEW GENUS

TYPE SPECIES: *S. estesi*,² new species.

¹ For the River Styx, *Fluvius Stygius*, and *chelys*, turtle; in allusion to the type horizon, the Hell Creek Formation.

² For Dr. Richard Estes, Boston University, who has been particularly active in the study of Upper Cretaceous lower vertebrates.

KNOWN DISTRIBUTION: Maestrichtian of Montana.

DIAGNOSIS: Skull wedge-shaped, width equal to length; temporal emargination deep; nasals not expanded laterally; prefrontals with small dorsal lappet; no squamosal parietal contact; parietal larger than frontal; frontoparietal suture tends to be curved, concave posteriorly; quadratojugal C-shaped with dorsal process but without anterior expansion; orbits opening laterally; triturating surface smoothly convex without a high tomial ridge, as in *Eubaena*, but incipient secondary palate absent; cheek emargination not reaching lower level of orbit; maxillae laterally constricted; skull roof terminating in point over crista supraoccipitalis; jugal entering orbital margin.

Stygiochelys estesi, new species

TYPE-SPECIMEN: A.M.N.H. No. 2601, a partially damaged skull without mandible.

LOCALITY: SW¼ NW¼, sec. 1, T. 15 N., R. 55 E., near Glendive, Montana.

HORIZON: Hell Creek Formation.

COLLECTOR: Robert Hiatt of Glendive, Montana.

TABLE 1
COMPARISON OF *Stygiochelys* AND *Eubaena*

Character	<i>Stygiochelys</i>	<i>Eubaena</i>
Contacts of nasal	Frontal only	Frontal and maxilla
Frontal enters orbital margin	Yes	No
Length vs. width of parietals	Parietals wider than long	Parietals longer than wide
Skull roof overlying crista supraoccipitalis	Wide, does not extend beyond foramen magnum	Narrow, extends over foramen magnum
Size of orbits	Large	Small
Jugal enters orbital margin	Yes	No
Incipient secondary palate	No	Yes
Anterior portion of vomer	Wide	Narrow
Medial contact of pterygoids	Virtually absent due to contact of vomer and basisphenoid	Well developed
Relative size of basisphenoid	Large	Small
Length vs. width of skull	Width greater than length	Width and length about equal
Anterior part of skull developed into narrow snout	No	Yes

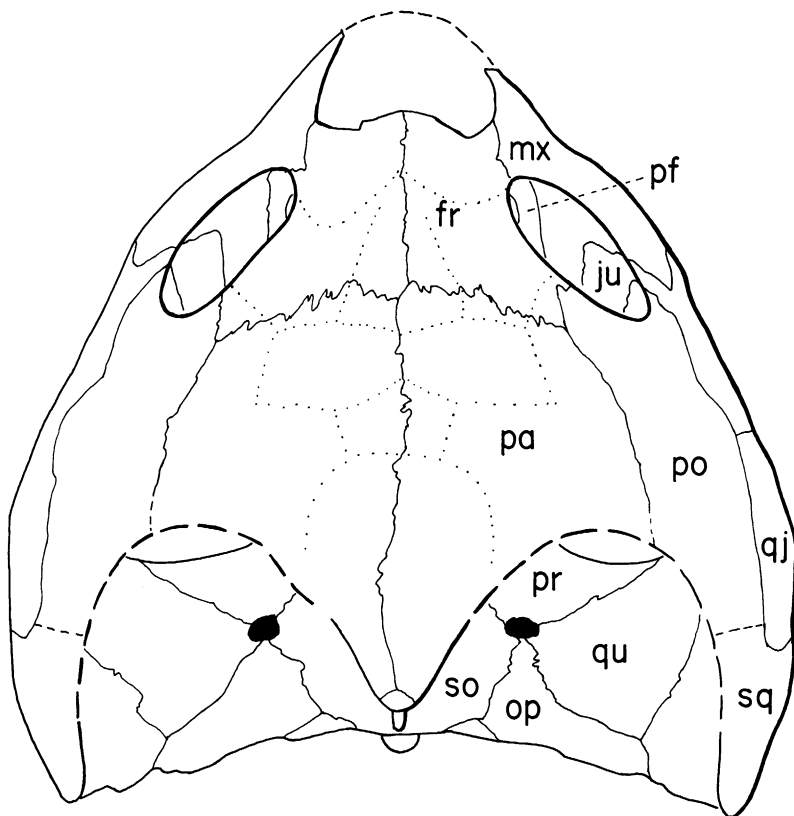


FIG. 2. Restored dorsal view, *Stygiochelys estesi*, new genus and species, based on the type specimen, A.M.N.H. No. 2601. Length of specimen, 61 mm.

Abbreviations: fr, frontal; ju, jugal; mx, maxilla; na, nasal; op, opisthotic; pa, parietal; pf, prefrontal; pm, premaxilla; po, postorbital; pr, prootic; qj, quadratojugal; qu, quadrate; so, supraoccipital; sq, squamosal.

SPECIFIC DIAGNOSIS: same as for genus.

DISCUSSION: The bone in the type of *Stygiochelys estesi* (A.M.N.H. No. 2601) is well-preserved and is not distorted or crushed. The damage present consists of freshly broken surfaces suggesting mechanical weathering just prior to collecting. The nasals were probably lost before or during burial as the frontal portion of the nasal-frontal suture is intact and filled with matrix. The ventral half of the specimen was enclosed in a limonitic sandstone matrix removed by air abrasive preparation. Impressions of plant material were found in the temporal fossae. In contrast

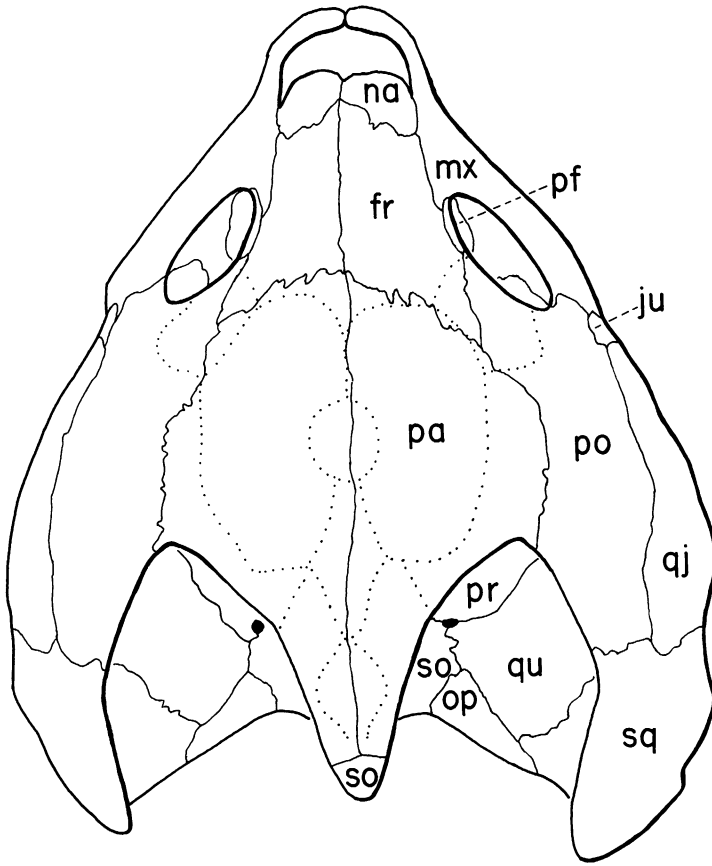


FIG. 3. Restored dorsal view of *Eubaena cephalica* Hay based on type-specimen Y.P.M. No. 1785. Length of specimen, 70 mm.

Abbreviations: fr, frontal; ju, jugal; mx, maxilla; na, nasal; op, opisthotic; pa, parietal; pf, prefrontal; pm, premaxilla; po, postorbital; pr, prootic; qj, quadratojugal; qu, quadrate; so, supraoccipital; sq, squamosal.

to most baenid specimens the sutures are open and easily determinable. The nasals and most of the premaxillae are missing as is most of the posterior edge of the skull roof. These are the only areas that are not preserved on one side or the other so that a nearly complete restoration of the skull can be made (figs. 2, 6A).

A complete comparative anatomy of baenoid skulls, including *Stygiuchelys* can be found elsewhere (Gaffney, ms.), and a detailed description is not repeated here. *Stygiuchelys* differs from the Tertiary baenids,



FIG. 4. Stereophotograph of palate of *Sygiocheilus estesi*, new genus and species, A.M.N.H. No. 2601. Length of specimen, 61 mm.



FIG. 5. Stereophotograph of palate of *Eubaena cephalica*, Y.P.M. No. 1785. Length of specimen, 70 mm.

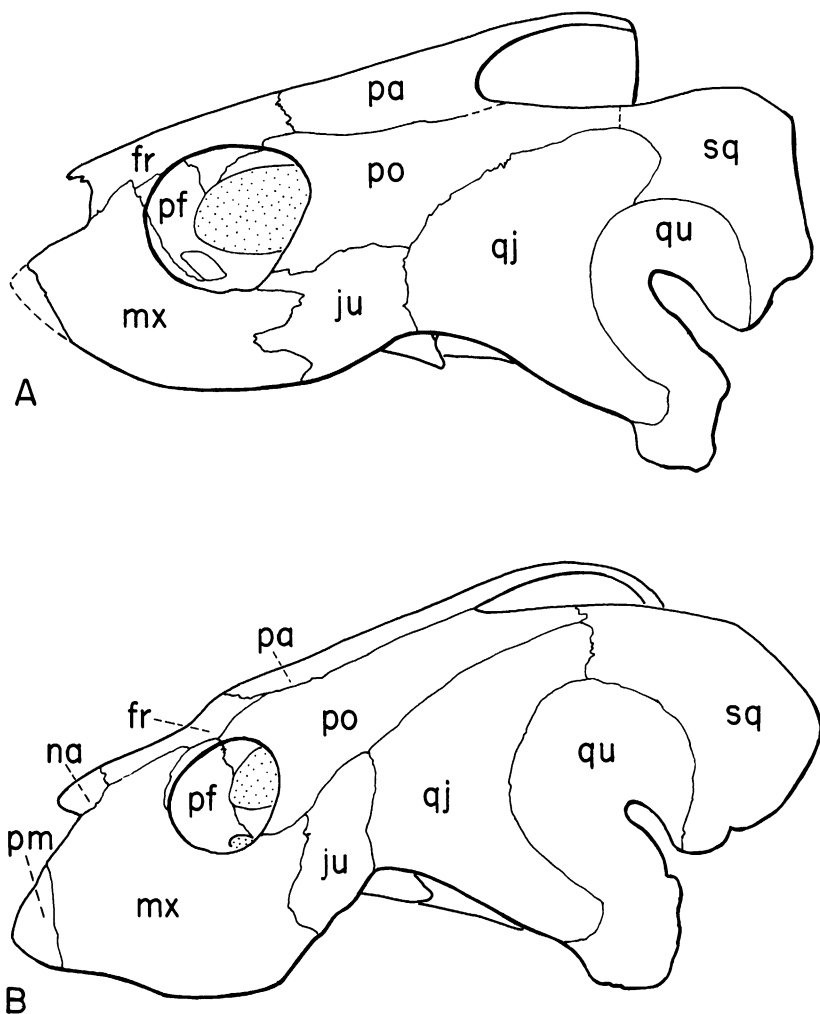


FIG. 6. Restored lateral views. A. *Stygiocbelys estesi*, new genus and species. B. *Eubaena cephalica*.

Abbreviations: fr, frontal; ju, jugal; mx, maxilla; na, nasal; op, opisthotic; pa, parietal; pf, prefrontal; pm, premaxilla; po, postorbital; pr, prootic; qj, quadratojugal; qu, quadrate; so, supraoccipital; sq, squamosal.

Baena and *Chisternon* (Hay, 1908, pp. 67–80, 85–90, had the best published descriptions of these genera), in the following features: deep temporal emargination, no squamosal-parietal contact, C-shaped quadratojugal, and a smoothly convex triturating surface lacking a high

tomial ridge. The only other baenid skull adequately described is the Cretaceous *Eubaena* (Hay, 1908, pp. 82-83) and this genus is the most similar of the known forms, to *Stygiochelys*. Table 1 and figures 2-6 summarize the distinctions between these two forms. The phylogenetic relationships are dealt with elsewhere (Gaffney, ms.).

SUMMARY

A new genus and species of baenid turtle, *Stygiochelys estesi*, is diagnosed and compared with *Eubaena cephalica*. Although *Stygiochelys* has a triturating surface similar to that in *Eubaena*, a number of features distinguish it from *Eubaena*.

LITERATURE CITED

GAFFNEY, EUGENE SPENCER

[ms.] The North American Baenoidea and the cryptodire-pleurodire dichotomy. Unpublished doctoral thesis, Columbia Univ., 1969.

HAY, O. P.

1908. The fossil turtles of North America. Carnegie Inst. Washington Publ., no. 75, pp. 1-568.

